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Factors of Pre-Med Success

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Abstract

The success of students' entrance into medical school depends on a number of different applicant factors. Two factors that many schools look at first are the academic scores: medical college admissions test (MCAT) and the grade point average (GPA). This research project looked at the possible correlation between these metrics and the success of the premedical students, in reference to acceptance to a medical school program. I utilized the data that the Association of American Medical Colleges retains for applicants of the past five years and the data supplied by the Director of the Premedical Sciences at the University of Montana. The results did show a significant correlation of the scores being above average for students applying to medical schools and acceptance into medical school. The results can also be utilized to identify schools where students from the University of Montana have a higher probability of receiving positive responses.

Methods

Data Sources

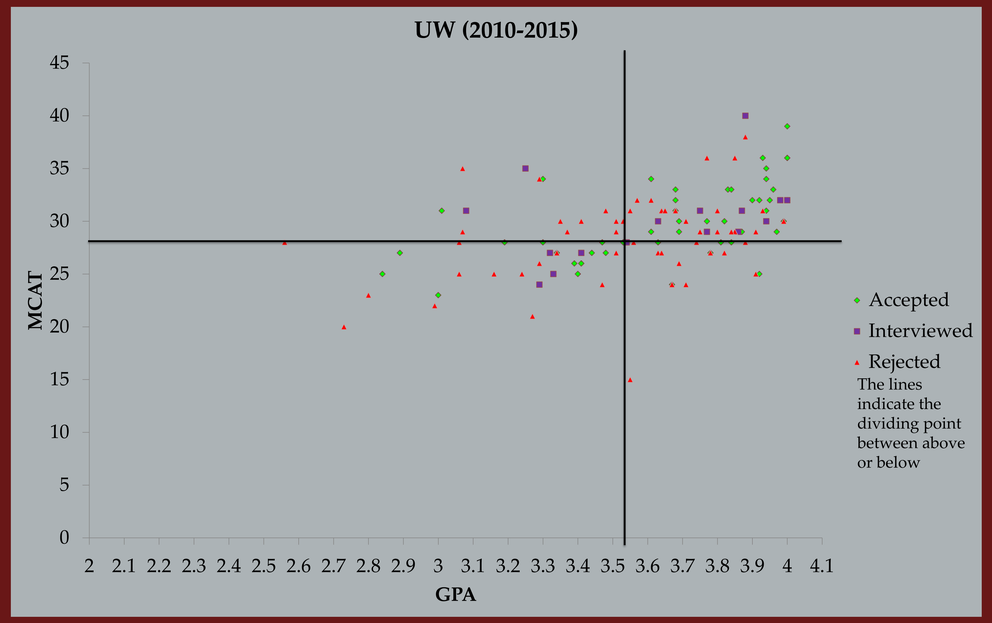
Data was acquired from two sources, the American Association of Medical Colleges (AAMC) and the office of the Director of Premedical Sciences at UM. The AAMC retains information for students that applied from 2010-present. Any student that spent a semester or more at the University of Montana would generate data that could be accessed under the supervision of Dr. Pershouse, the Director of Premedical Sciences. However, in an attempt to include only data for students that acquired an impactful education and support from the University of Montana for their application, only students that either graduated from the University of Montana, did graduate or post-baccalaureate work, or received a composite letter from the Director of PreMedical Sciences were used. The results detailing rejection or acceptance were retrieved from the AAMC website. However, records of students receiving interviews were only maintained by the Director of PreMedical Sciences from 2011 to the present year, so there was no interview data for the year of 2010.

Data Organization

An Excel spreadsheet was utilized to keep track of the data in order to manage the large amount of information. To maintain the data in a way that would allow for anonymity of the scores, but would also allow for review of the data for errors, initials were substituted for the student names. Next to their coded identification, their GPA, MCAT and the schools they applied was listed. The students results at each school (acceptance, interview, or rejection) were color coded . Following the creation of a master list that included data from both sources, lists specific to the medical schools students applied to were created. For school specific data sheets, I listed the information with acceptance, interview or rejection, followed by GPA and MCAT and the year that the statistics came from, again so there was an opportunity to check for errors.

Data Calculation

Once the data specific to each medical school were extracted, the data were plotted on a scatter plot. There were three sets: acceptance, rejection and interview; with GPA plotted on the X-axis and MCAT score on the Y axis. This allowed the visualization of the academic numerics for students together with their outcomes: rejection, acceptance, or interview. In addition, the percentage of students accepted, rejected, or interviewed was calculated to identify the University's overall rate with each school. Using the data AAMC provides in their table "Table 17: MCAT Scores and GPAs for Applicants and Matriculates to U.S. Medical Schools, 2003-2014" a Nationwide median score for MCAT and GPA scores was used to subdivide the data into two groups: 1)above average scores and 2)below average scores for each the GPA and the MCAT- making a total of 4 groups (AAMC, 2014). The percentage of acceptances, interviews or rejections for each group was then calculated to identify any significant differences in the rate of acceptance based on the higher or lower values for MCAT and GPA. Some schools had only rejections; so it was assumed that the acceptance rate was 0%. In a separate table (Table 1) we calculated the percentage of students accepted at each school from the University of Montana cohort and subtracted the national acceptance rate for that school. This Bias score (UM acceptance %- National %) reflected those schools where we achieve a better than average or less than average rate of acceptance. This Bias score was then weighted to reflect the size of the cohort applying to each school from UM. Our reasoning was that a result based on only 2 students applying carried less weight than one representing the results from 50 students. By using the product of the bias score and the number of UM applicants, we arrived at a score we referred to as the confidence score. The medical schools were ordered from the most positive number (UW) to the most negative number. The order of schools had some surprising results, including schools we had not previously thought of as biased in our favor. We also learned of many schools that historically have been less than receptive to our student applications. This data will be used to advise future premedical applicants.



	National Data				UM Data			
Name of College	# of applicants	# of matriculants	% Acceptance Nationally	% Acceptance by UM Students	#applicants	#matriculants	Score Bias-Difference between UM and National % Acceptance	Confidence Score- Score Bias times the number of UM Applicants
UW (WWAMI) (Montana State Data)	120	30	25.0	41.7	120	50	16.7	2000.0
Oregon Health Science University	5640	139	2.5	13.0	100	13	10.5	1053.5
University of North Dakota Grand Forks	1683	78	4.6	29.7	37	11	25.1	928.5
University of Colorado	6171	181	2.9	12.3	73	9	9.4	685.9
University of Arizona Phoenix	3863	80	2.1	16.7	30	5	14.6	437.9
University of Nevada	1269	70	5.5	12.8	39	5	7.3	284.9
Washington University St. Louis	4367	123	2.8	33.3	9	3	30.5	274.7
University of Arizona Tucson	4816	115	2.4	7.1	56	4	4.8	266.3
University of Hawaii	2225	66	3.0	10.3	29	3	7.4	214.0
New York Medical College	12207	196	1.6	28.6	7	2	27.0	188.8

Discussion

The results indicate the importance of the GPA and MCAT scores of students applying to medical school. Though there was not a lot of data for many schools, the majority of the schools still demonstrated a significant change in the acceptance rate for students who had either a GPA or an MCAT that was above average. It was also statistically significant with schools like UW where 120 students applied, and there was a difference in student success for those with above average MCAT or GPA scores. I did not calculate the difference for students who had above average MCAT and GPA versus those who only had above average in one of the factors. This research can be expanded upon with factoring in other factors like research experience, clinical experience, volunteering and shadowing. The GPA/MCAT score results demonstrated the importance of the higher scores for acceptance whereas the data from the Table 1 shows the bias of schools. The table clearly shows the schools, like UW, OHSU and UND that the University of Montana's students have a higher chance of getting into and those that may be less likely like Stanford, University of California San Francisco, and University of New Mexico. This data can also be used for the Pre-Medical Sciences Program at the University of Montana for advising students students currently applying to medical schools.